

REMARKS

Favorable reconsideration of this application is respectfully requested in view of the amendments above and the following remarks. By virtue of the amendments above, Claims 21-26 have been added. Therefore, Claims 1-26 are currently pending in the present application, of which, Claims 1, 12, 21, and 24 are independent claims.

No new matter has been introduced by way of the claim additions and entry thereof is therefore respectfully requested.

Drawings

The Applicants note with appreciation the indication that the Examiner has accepted the Drawings filed on December 20, 2000.

Allowable Subject Matter

The Applicants note with appreciation the indication that Claims 3-10, 13, 14, and 18-20 are allowable over the prior art of record. At this time, the Applicants believe that all of pending claims are allowable over the prior art of record and thus have opted to not amend these claims into independent form. Applicant, however, reserves the right to amend these claims in the future.

Claim Rejection Under 35 U.S.C. §102

The test for determining if a reference anticipates a claim, for purposes of a rejection under 35 U.S.C. § 102, is whether the reference discloses all the elements of the claimed combination, or the mechanical equivalents thereof functioning in substantially the same way to produce substantially the same results. As noted by the Court of Appeals for the Federal

Circuit in *Lindemann Maschinenfabrick GmbH v. American Hoist and Derrick Co.*, 221

USPQ 481, 485 (Fed. Cir. 1984), in evaluating the sufficiency of an anticipation rejection under 35 U.S.C. § 102, the Court stated:

Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim.

Therefore, if the cited reference does not disclose each and every element of the claimed invention, then the cited reference fails to anticipate the claimed invention and, thus, the claimed invention is distinguishable over the cited reference.

Claim 1:

Claim 1 has been rejected under 35 U.S.C. §102(e) as allegedly being anticipated by the disclosure contained in U.S. Patent No. 6,262,738 to Gibson et al. This rejection is respectfully traversed because it is respectfully submitted that Claim 1 and the claims that depend therefrom are not anticipated by the disclosure contained in Gibson et al. for at least the following reasons.

The Official Action asserts that Gibson et al. discloses all of the elements set forth in Claim 1 of the present invention. More particularly, the Official Action alleges that in column 4, lines 41-49, Gibson et al. discloses the step of “assigning a distance value to each pixel of the distance map associated with a corresponding region of the source image, wherein for each pixel, the distance value represents a distance between a center of that pixel and a nearest point of the boundary curve”. It is not at all clear as to how the Official Action arrives at the conclusion that Gibson et al. discloses the above-identified features.

Moreover, it is respectfully submitted that column 4, lines 41-49, of Gibson et al. fails to disclose that, *inter alia*, “the distance value represents a distance between a *center* of that

pixel and a nearest point of the boundary curve”. (emphasis added). Instead, column 4, lines 41-49, describes the elements depicted in Figures 1 and 2 of Gibson et al. More specifically, this passage discloses the relationships between distances 12, 16, and 20 to the exterior points 10, 14, and 18, respectively. Gibson et al. also discusses the relationship between distance 24 and the interior point 22. Thus, column 4, lines 41-49, of Gibson et al. do not disclose that the distance value represents a distance between a center of a pixel and a nearest point of the boundary curve as set forth in Claim 1 of the present invention. In fact, as shown in Figure 2, the exterior points 10, 14, and 18 are all located on intersecting lines of the grid 8, which may form the boundaries of individual pixels in the grid 8. Clearly, therefore, the distances 12, 16, and 20 between the respective exterior points 10, 14, and 18 and the 2D object do not represent distances between a center of a pixel and a nearest point of the boundary curve.

For at least the foregoing reasons, Gibson et al. fails to disclose each and every element of the claimed invention as set forth in Claim 1 and therefore fails to meet the test for anticipation. It is therefore respectfully submitted that Claim 1 and the claims that depend therefrom are allowable over the disclosure contained in Gibson et al. The Examiner is thus respectfully requested to withdraw the rejection of Claim 1 as being anticipated by the disclosure contained in Gibson et al.

Claims 12 and 15:

Claims 12 and 15 have been rejected under 35 U.S.C. §102(e) as allegedly being anticipated by the disclosure contained in U.S. Patent No. 6,603,484 to Frisken et al. This rejection is respectfully traversed because it is respectfully submitted that Claim 12 and the claims that depend therefrom are not anticipated by the disclosure contained in Frisken et al. for at least the following reasons.

The Official Action asserts that Frisken et al. discloses all of the elements set forth in Claim 12 of the present invention. More particularly, the Official Action states that lines 1-4 of some undisclosed column as well as lines 54-57 of column 8 disclose that a first distance map of a source image is computed. Because it is unclear as to which column the first cited column refers, only the second cited passage will be addressed. That passage refers to the combination of the children of cells at a particular resolution level whenever possible after the fully populated hierarchical distance field (HDF) has been generated. It is respectfully submitted that the combination of the children of cells in a fully populated HDF is not the same as “computing a first distance map of a source image” as set forth in Claim 12 of the present invention. In addition, the HDF discussed in Frisken et al. is not the same as a distance map as evidenced, for instance, in column 2, lines 14-16 and column 2, lines 36-38, of Frisken et al.

In fact, Frisken et al. actually teaches away from the use of distance maps altogether. In column 2, lines 36-38, Frisken et al. discloses that “[a] distance map is defined to be the sampled Euclidean distance field where the sample locations lie on a regular grid.” In the paragraphs that follow that cited passage, Frisken et al. discusses some of the drawbacks Frisken et al. perceives as existing with the use of distance maps. For instance, Frisken et al. states that “because distance maps are regularly sampled, they suffer from some of the same problems as sampled volumes.” (column 2, lines 64-66). Frisken et al. further states that “distance maps are typically rendered by using volume rendering techniques...[which] can be very slow, and may require many seconds or minutes per frame for high quality rendering of reasonably sized volumes.” These perceived drawbacks are provided by Frisken et al. to illustrate some of the potential benefits of using HDFs over distance maps.

At least by virtue of Frisken et al.'s statements regarding Frisken et al.'s perceived drawbacks in using distance maps, it is clearly evident that Frisken et al. had no intention of employing distance maps. In this regard, Frisken et al. fails to disclose that a first distance map of a source image is computed as set forth in Claim 12 of the present invention. Therefore, Frisken et al. also fails to disclose that a first distance map is downsampled to form a second distance map as also set forth in Claim 12 of the present invention. Consequently, Frisken et al. cannot anticipate the claimed invention as set forth in Claims 12 and 15 as alleged in the Official Action.

For at least the reasons cited above, Frisken et al. fails to disclose each and every element of the claimed invention as set forth in Claims 12 and 15 and therefore fails to meet the test for anticipation. It is therefore respectfully submitted that Claim 12 and the claims that depend therefrom are allowable over the disclosure contained in Frisken et al. The Examiner is thus respectfully requested to withdraw the rejection of Claims 12 and 15 as being anticipated by the disclosure contained in Frisken et al.

Claim Rejection Under 35 U.S.C. §103

The test for determining if a claim is rendered obvious by one or more references for purposes of a rejection under 35 U.S.C. § 103 is set forth in MPEP § 706.02(j):

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Therefore, if the above-identified criteria are not met, then the cited reference(s) fails to render obvious the claimed invention and, thus, the claimed invention is distinguishable over the cited reference(s).

Claim 11:

The Official Action sets forth a rejection of Claim 11 under 35 U.S.C. §103(a) as allegedly being unpatentable over the disclosure contained in Gibson et al. This rejection is respectfully traversed because Gibson et al. fails to disclose the claimed invention as set forth in Claim 11.

The Official Action correctly notes that Gibson et al. fails to disclose that the source image comprises boundary curves defined by continuous parametric functions. However, the Official Action “takes Official Notice that it is well known to represent boundary curves by continuous parametric functions.” This assertion fails to address the core features of Claim 11. Namely, that the source image comprises boundary curves. Thus, the Official Action has failed to assert that it would have been obvious for the source image to even have boundary curves. Accordingly, the Official Action has failed to prove that a *prima facie* case of obviousness exists with respect to the Gibson et al. document.

In addition, and as stated hereinabove, Gibson et al. fails to disclose all of the features of Claim 1 of the present invention. At least by virtue of the Official Action’s failure to show that Gibson et al. may somehow be modified to disclose all of the elements of Claim 1, it is respectfully submitted that Claim 11 is also allowable over Gibson et al.

For at least the foregoing reasons, Claim 11 of the present invention is patentably distinguishable and allowable over the disclosure contained in Gibson et al. The Examiner is thus respectfully requested to withdraw the rejection of Claim 11.

Claim 2:

The Official Action sets forth a rejection of Claim 2 under 35 U.S.C. §103(a) as allegedly being unpatentable over the disclosure contained in Gibson et al. in view of the disclosure contained in U.S. Patent No. 4,670,892 issued to Abele et al. This rejection is respectfully traversed because the disclosures contained Gibson et al. and Abele et al., considered singly or in combination, fails to disclose the claimed invention as set forth in Claim 2.

The Official Action correctly notes that Gibson et al. fails to disclose that an unsigned graylevel image corresponding to the source image is generated as set forth in Claim 2 of the present invention. In an attempt to make up for this deficiency in Gibson et al., the Official Action relies upon the disclosure contained in Abele et al. More particularly, the Official Action asserts that Abele et al. discloses all of the features of Claim 2 and that it would have been obvious to one of ordinary skill in the art to modify Gibson et al. with the Abele et al. disclosure to enhance the distance map computation in Gibson et al. This assertion is respectfully traversed because the motivation to combine Gibson et al. and Abele et al. would render Gibson et al. unsuitable for its intended purpose.

As stated hereinabove, Gibson et al. does not use distance maps due to Gibson et al.'s perceived drawbacks of its use. Therefore, any argument directed to improving a distance map computation is improper as it would destroy the intent of Gibson et al. Accordingly, it is

respectfully submitted that the proposed motivation for combining the disclosures of Gibson et al. and Abele et al. is improper and the proposed combination thereof should be withdrawn.

In addition, and as stated hereinabove, Gibson et al. fails to disclose all of the features of Claim 1 of the present invention. At least by virtue of the Official Action's failure to show that Gibson et al. may somehow be modified by the disclosure contained Abele et al. to disclose all of the elements of Claim 1, it is respectfully submitted that Claim 2 is also allowable over Gibson et al., considered either singly or in combination with Abele et al.

For at least the foregoing reasons, Claim 2 of the present invention is patentably distinguishable and allowable over the disclosures contained in Gibson et al. and Abele et al. The Examiner is thus respectfully requested to withdraw the rejection of Claim 2.

Claim 17:

The Official Action sets forth a rejection of Claim 17 under 35 U.S.C. §103(a) as allegedly being unpatentable over the disclosures contained in Frisken et al., Gibson et al., and Abele et al. This rejection is respectfully traversed because the disclosures contained Frisken et al., Gibson et al. and Abele et al., considered singly or in combination, fails to disclose the claimed invention as set forth in Claim 17.

Initially, it is not at all clear as to how the above-cited documents are being relied upon to reject Claim 17 of the present invention. More particularly, although the Official Action correctly notes that neither Frisken et al. nor Gibson et al. discloses the elements set forth in Claim 17, all of the arguments pertaining to the rejection of Claim 17 are directed to a modification of Gibson et al. in view of Abele et al. That is, the Official Action does not present any arguments pertaining to the modification of Frisken et al. in view of Abele et al. One of the problems with this rejection is that there was no rejection of Claim 12, upon which

Claim 17 ultimately depends, set forth in the Official Action based upon the disclosure contained in Gibson et al. Therefore, even assuming for the sake of argument that Gibson et al. could be modified as alleged in the Official Action, the proposed modification would not yield the present invention as set forth in either of Claims 12 and 17.

At least by virtue of the Official Action's failure to show that Gibson et al. or Frisken et al. may somehow be modified by the disclosure contained Abele et al. to disclose all of the elements of Claim 17, it is respectfully submitted that Claim 17 is also allowable over Gibson et al. and Frisken et al., considered either singly or in combination with Abele et al.

For at least the foregoing reasons, Claim 17 of the present invention is patentably distinguishable and allowable over the disclosures contained in Gibson et al., Frisken et al., and Abele et al. The Examiner is thus respectfully requested to withdraw the rejection of Claim 17.

Newly Added Claims

Claims 21-26 have been added to further define the invention. Support for the features set forth Claims 21-26 may be found on page 15, lines 9-11. Claims 21-26 are allowable over the documents cited in the Official Action for reasons similar to those presented hereinabove with respect to Claims 1 and 12.

Conclusion

In light of the foregoing, withdrawal of the rejections of record and allowance of this application are earnestly solicited.

PATENT

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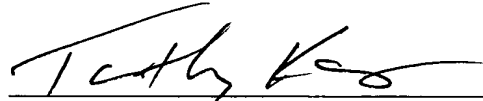
Should the Examiner believe that a telephone conference with the undersigned would assist in resolving any issues pertaining to the allowability of the above-identified application, please contact the undersigned at the telephone number listed below. Please grant any required extensions of time and charge any fees due in connection with this request to deposit account no. 08-2025.

Respectfully submitted,

Ron Kimmel et al.

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By



Timothy B. Kang
Registration No. 46,423

MANNAVA & KANG, P.C.
2930 Langdon Gate Drive
Fairfax, VA 22031
(703) 560-8503
(703) 991-1162 (fax)